# Support of Space Situational Awarenes

POC: Dr. George Ramseyer, AFRL/RITA   (315) 330-3492   George.Ramseyer@rl.af.mil

Dr. Chris Sabol, AFRL/RDSMA   (808)874-1594

The Air Force and the nation heavily rely on Space Situational Awareness (SSA) as the foundation for our defense in space. SSA is recognized as a critical, yet often elusive, foundation for successful decision-making across a broad range of complex and dynamic space systems. Because of the technological and situational complexity of this domain, having complete, accurate and up-to-the-minute SSA is essential for Air Force tactical decision-makers. In collaboration with the AFRL/Directed Energy (RD) Space Situational Awareness Institute, AFRL/Information Directorate (RI) scientists are developing and demonstrating distributed high performance computing that is transforming strategic SSA technology into real-time, interactive capabilities. RI scientists have been among the pioneers of real time, interactive computing, utilizing geologically distributed high performance computers for Air Force needs. Previous to this, high performance computing "jobs" were submitted to a queue to be run in batch mode, and the results might not be available for hours or days, which was adequate for Air Force strategic needs. Leveraging RI developed information management capabilities and RD developed image enhancement capabilities, interactive technology is being developed and demonstrated that allows for the processing of live imagery data from anyplace in the world being transmitted to distributed high performance computing systems for processing, with the resultant products being sent to distributed Air Force and other decision makers in real time. Before these efforts began, it would have taken nearly 24 hours to process this telescopic raw imagery data. Currently with this technology, this data can be processed on distributed high performance computer systems and forwarded to decision makers in seconds, moving this capability from the strategic domain to the tactical domain.
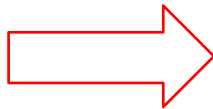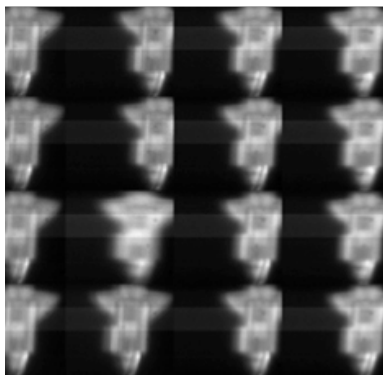
Raw imagery data from a telescope in Hawaii before and after being interactively processed by high performance computing through RI and RD collaboration.